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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/509,698

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Hiroki Kisu

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EXAMINER

SARKAR, ASOK K

ART UNIT

PAPER NUMBER

2891

MAIL DATE

DELIVERY MODE

01/05/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/509,698	Applicant(s) KISU ET AL.	
	Examiner Asok K. Sarkar	Art Unit 2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 2 – 5, filed September 16, 2008, with respect to the rejection(s) of claim(s) 1, 3 – 8 and 12 under 35 USC 102 (e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art references.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speakman, US 2007/0087564 in view of Komatsu, US 6,730,400.

Regarding claim 1, Speakman teaches a method of manufacturing an electrically conductive member having an electrically conductive film on a surface of a substrate, comprising the steps of: (i) applying a colloid solution of a liquid medium and a colloid, to a porous surface of the substrate to form a layer containing the colloid on the substrate; and (ii) drying the layer containing the colloid with radiation to remove the organic substance and the liquid medium and to anchor the metal colloid particles without adversely effecting the substrate (this is inherent since the colloidal structure will collapse due to the absorption of the liquid medium and surface active molecules by the porous substrate thereby anchoring the metal colloid particles and the radiation drying will not raise the substrate temperature high enough to have any adverse effect on the substrate. See Buining, WO 9901766), thereby forming an electrically conductive layer in various places of the disclosure especially in paragraphs 17, 18, 28, 55, 110, 151, 226, 233, 240, 243, 251, 464 and 480.

Speakman teaches radiation enhanced drying in paragraph 28, but fails to explicitly teach that the colloid solution has a core of a metal colloidal particle and a shell of an organic substance and the radiation is infrared radiation.

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Komatsu teaches a method of making colloidal solutions of various metals that has a core of a metal colloidal particle and a shell of an organic substance (this is also an inherent property of a colloidal solution since the organic moiety adsorbs on the surface of the metal particle to form a charged surface that keeps the colloidal particles suspended in the solution) in the abstract and under background art in columns 1 – 3 for the benefit of forming pastes for wires of nano – electronic circuits in column 1, lines 25 – 33.

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention that the colloidal solution used by Speakman will have has a core of a metal colloidal particle and a shell of an organic substance for the benefit of forming liquid pastes for wires of the nano – electronic circuits as taught by Komatsu in column 1, lines 25 – 33.

It would have been obvious also to one with ordinary skill in the art at the time of the invention that the radiation drying can be easily accomplished by using infrared lamps and the use of infrared drying/heating is well known in the industry.

Regarding claim 3, Speakman teaches the metal is gold and platinum in paragraphs 233 and 480.

Regarding claims 5 and 6, Speakman teaches the method includes the step of forming the layer containing the colloid on the porous surface in a position – selective manner by applying the colloidal solution to the porous surface by inkjet deposition in paragraphs 17 – 20. The use of the term drop on demand inherently signifies a position – selective deposition process.

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6. Claims 4, 7, 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speakman, US 2007/0087564 in view of Komatsu, US 6,730,400 as applied to claim 1 above, and further in view of the Admitted Prior Art (APA).

Regarding claim 4, Speakman fails to disclose applying the colloidal solution to the surface by a spin coating method.

The APA teaches that the colloidal solution can be applied to the surface by a spin coating method for the benefit of forming a film with excellent electrical conductivity in page 2, lines 2 – 12.

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Speakman and apply the colloidal solution to the surface by a spin coating method for the benefit of forming a film with excellent electrical conductivity as taught by the APA in page 2, lines 2 – 12.

Regarding claim 7, Speakman teaches the use of ceramic substrates in paragraph 368, but fails to disclose that the vicinity of the porous surface, including the surface, has a pseudobehmite structure.

The APA teaches applying colloidal solution on a substrate having a porous structure of pseudobehmite type for the benefit of greatly improving the quality of an electrically conductive film by the excellent ink absorbing capacity and high image density of the substrate (see English abstract of JP 2000318308) in page 11, lines 1 – 5.

Therefore, it would have been obvious to one with ordinary skill in the art at the

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time of the invention to modify Speakman and supply the porous surface with a pseudobehmite structure for the benefit of greatly improving the quality of an electrically conductive film by the excellent ink absorbing capacity and high image density of the substrate as taught by the APA in page 11, lines 1 – 5.

Regarding claim 8, Speakman fails to disclose that the following condition is satisfied when it is assumed that an average particle diameter of the metal colloid is Θ_1 ave and that an average pore diameter of the porous surface is Θ_2 ave: $\Theta_1 \text{ ave} \geq \Theta_2 \text{ ave}$.

However, it would have been obvious to one with ordinary skill in the art at the time of the invention that the relation $\Theta_1 \text{ ave} \geq \Theta_2 \text{ ave}$ will hold true since otherwise the ink will not be absorbed in the porous layer and the quality of an electrically conductive film will not be optimal.

Regarding claim 12, Speakman teaches using the film in IC chips and semiconductor substrates in column 1, lines 10 – 18, but fails to teach that the electrically conductive member has portions in contact with an organic semiconductor

However, it would have been obvious to one with ordinary skill in the art at the time of the invention that the electrically conductive member has portions in contact with an organic semiconductor since organic semiconductors are known to be used in many commercial OLED and organic TFT devices and Speakman teaches use of organic semiconductors in paragraph 488.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Asok K. Sarkar whose telephone number is 571 272 1970. The examiner can normally be reached on Monday - Friday (9 AM- 6 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue A. Purvis can be reached on 571 272 1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Asok K. Sarkar/
Primary Examiner, Art Unit 2891
December 30, 2008